DOCUMENT RESUME

ED 325 973 EA 022 475

AUTHOR Lamon, William E.; Sanner, James
TITLE Microcomputers in Oregon Secondary Schools: The Principals' Perspective. The 1989 Statewide Survey of the Oregon Educational Computer Consortium, University of Oregon, and the Oregon Department of Education.
INSTITUTION Oregon State Dept. of Education, Salem.
PUB DATE 90
NOTE 28p.
AVAILABLE FROM Publications Sales Clerk, Oregon Department of Education, 700 Pringle Parkway SE, Salem, OR 97310-0290 ($3.50).
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Administrator Attitudes; Computer Assisted Instruction; Computer Literacy; *Computer Uses in Education; Elementary Secondary Education; *Microcomputers; *Principals; *Secondary Schools; Technological Advancement
IDENTIFIERS *Oregon

ABSTRACT

Perceptions and opinions of secondary school principals on the status of microcomputers in the schools are examined. Mailed questionnaires to a random stratified sample of principals of 21 junior high schools and 73 junior/senior and senior high schools yielded a 64 percent response rate. Findings indicate that the average school allots 3 to 6 percent of its instructional equipment and materials budget for computer hardware and project a 15 percent rate of growth for computer purchases in 1990. Conclusions also demonstrate the need for formal computer training of principals and teachers, and the provision of incentives for computer literacy. Fifteen tables and four graphs are included. (9 references) (LMI)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED325973

SCOPE OF INTEREST NOTICE

The ERIC Facility has assigned this document for processing to: EA IR

In our judgment, this document is also of interest to the Clearinghouses noted to the right. Indexing should reflect their special points of view.

Microcomputers in Oregon Secondary Schools

•

The Principals' Perspective

The 1989 Statewide Survey
of the
Oregon Educational Computer Consortium,
University of Oregon
and the
Oregon Department of Education

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

S. J. Case

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

John W. Erickson
State Superintendent of Public Instruction
Oregon Department of Education
700 Pringle Parkway SE
Salem, Oregon 97310-0290

EA 022 175

Microcomputers in Oregon Secondary Schools

•

The Principals' Perspective

THE 1989 STATEWIDE SURVEY
of the
OREGON EDUCATIONAL COMPUTER CONSORTIUM

by

William E. Lamon
College of Education
University of Oregon

James Sanner
Instructional Technology
Oregon Department of Education

FALL 1990

It is the policy of the State Board of Education and a priority of the Oregon Department of Education that there will be no discrimination or harassment on the grounds of race, color, sex, marital status, religion, national origin, age or handicap in any educational programs, activities, or employment. Persons having questions about equal opportunity and nondiscrimination should contact the State Superintendent of Public Instruction at the Oregon Department of Education.

This document was produced by
the Publications and Multimedia Center
Oregon Department of Education
Salem, Oregon 97310-0290

Complimentary copies have been sent to Oregon school districts.
Additional copies are available for $3.50 each.
Place orders with the Publications Sales Clerk at 378-3589.

All or any part of this document may be photocopied for educational purposes without permission from the Oregon Department of Education.

10655519902000

John W. Erickson
State Superintendent
of Public Instruction

OREGON DEPARTMENT OF EDUCATION
700 PRINGLE PARKWAY SE, SALEM, OREGON 97310-0290 PHONE (503) 378-3569

May 16, 1990

Dear Educators:

Microcomputers in Oregon Secondary Schools: The Principals' Perspective represents the latest research on the use of microcomputers in Oregon's classrooms. This is one of a four-part series addressing the use of computers in the schools. The contents of this document are a joint venture of the Oregon Department of Education, the Oregon Educational Computer Consortium and the University of Oregon. The amount of data which went into this research is amazing. Only a computer could digest it all! I know that technology changes rapidly and that data of this type also change. However, the manner in which this information is presented allows you to predict how changes take place.

The content of this document is written to assist administrators in planning for technological changes in secondary schools. Many of you are currently modifying the 1985 five-year-plan. The historical perspective these data provide should be of assistance in that planning. Strategies have changed and microcomputers are now tools for productivity rather than just objects of study. I believe you will find that computers will become even more important in collecting information for students and school personnel during the next few years.

Technology will continue to affect the educational process through innovative applications. As districts plan for the future, much consideration will be given for the role that technology will play in the education of Oregon students.

Sincerely,

John W. Erickson
State Superintendent
of Public Instruction

ACKNOWLEDGMENTS

This report is the result of many individuals' efforts. I therefore wish to express my sincere indebtedness to the many undergraduate and graduate students in the Division of Teacher Education of the University of Oregon, Eugene, Oregon, who through their unselfish commitment of time and data entry, made the writing of this report possible. Therefore, the quality of this final report stems from the hard work and excellent data manipulation and analysis provided to me by the following dedicated research assistants:

STEWARD SAVARD, my graduate student from Fort Nelson, British Columbia, Canada.

DAVID GREEN, my graduate student from the South Australian College of Advanced Education, Adelaide, **South Australia.**

JIM PRADO, my doctoral candidate from Southern Oregon College of Education, Ashland, Oregon.

JOHN MAXWELL, my graduate student in the College of Education at the University of Oregon, Eugene, Oregon.

KATHERINA MEYER, my graduate from the University of Oregon, Eugene, Oregon.

SOPHIA ANG, my graduate student from **Singapore.**

Also, a special thank you note to the members of the Executive Council of the Oregon Educational Computer Consortium, **Dr. Judy Grosenick,** Associate Dean of Teacher Education of the University of Oregon, and **Don Erickson**, Oregon Department of Education, all of whom provided the financial support to complete this survey successfully.

And finally, my sincere appreciation to **Jack Turner**, Eugene 4J School District Computer Coordinator, for his generous assistance and moral support which made this study become a reality.

William E. Lamon

TABLE OF CONTENTS

Acknowledgments iii

Tables and Graphs vi

Introduction 1

Method 3

The Sample 3

Response Rate 4

Source of Survey Information 4

Results Introduction 4

Some Historical Perspectives 5

Computer Locations/Numbers 8

Funds for Software 10

Microcomputer Users 12

Teacher Training Issues 16

Conclusion 18

References 21

TABLES AND GRAPHS

Table I	Student Enrollment by Strand	5
Table II	Instructional Materials Expenditures	6
Graph I	Hardware Expenditures	7
Table III	Computer Expansion Rates	7
Table IV	Planned Uses for New Computers	8
Graph II	Computer Locations	8
Table V	How Many Computers	9
Table VI	Where to Put New Computers	9
Table VII	Software Spending	10
Table VIII	Most Important Purchasing Person	10
Table IX	Coordinating Use of Computers	11
Table X	Frequency of Principal's Use of Computers	12
Table XI	How Principals use Computers	13
Table XII	Teacher's Use of Computers	14
Graph III	Formal Computer Training	15
Table XIII	Concerns Heard by Principals	15
Table XIV	Use of First Computer	16
Table XV	Staff Competency	17
Graph V	Computer Training of Teachers	17

INTRODUCTION

Using microcomputers to enhance instruction has almost become a "cliché" to many educators. Just a glance at the topics presented in the variety of general computer education or computer research oriented publications, indicates that the acquisition and the use of microcomputers in schools and homes has increased dramatically in popularity since these technological machines have become more reasonable in price and the software for educational consumption has improved in their availability, quality and diversity. As both hardware and software have become more sophisticated, so have the issues related to the acquisition. While in the past, administrators were confused with what type of hardware and software to purchase for their schools, these same administrators now face the problem of seeing their schools equipped with obsolete machines. As the software becomes more complex and utilitarian in nature, they require more computer memory to run them. Hence, as technology blossoms in its capabilities and potential applicability in a school, administrators are faced with either the expense in updating current equipment or with the expense associated with the purchase of a new breed of computer if they want to meet the needs of both students and the ambitions of computer-using staff or faculty.

Using microcomputers to enhance instruction has almost become a "cliché" to many educators.

Today, the computer "informed or literate" principal will not challenge the thought . . .

Today, the computer "informed or literate" principal will not challenge the thought that if used effectively, the potential of future generations of microcomputers in schools will probably surpass the potential of any other educational media used in the education of students. The use of computer technology at the secondary school level will increase dramatically during the remaining part of this century. A look at the beginning of the first half of the 1980s finds that almost half of all high schools in the United States had no computers at all. By the end of the second half of the 80s, a typical high school had more than 20 microcomputers. This "wished for" phenomena has become a reality mainly because of the growing infusion of money for both hardware and software, a growing faculty and staff showing awareness of the capabilities of new technological advances and a significant increase in interest in the instructional potential of the computer. Today, any high school student can have access to an IBM or an IBM "clone" or an Apple brand computer to process any document, to study almost any subject area offered in the high school curriculum, or to better understand, through the aid of innovative programs, the world in which they live.

. . . any high school student can have access to a . . . computer.

Now we are entering the decade of the 90s and the "apostles" of computer usage all over the United States predict that microcomputers will become an indispensable element in the precollege classroom. Looking at trends in the use of microcomputers in Oregon schools, it is concluded that the increased use of microcomputers in instruction will force school districts to reevaluate their financial commitment to computer technology and to augment significantly, not only the basic computer literacy of staff and faculty, but the instructional application literacy of the school community. Such literacy will not only insure a cost and educational effective selection and use of both hardware and software, but develop a bridge between what is known about the use of microcomputers for

. . . the "apostles" of computer usage . . . predict that microcomputers will become an indispensable element . . .

. . . the increased use of microcomputers in instruction will force school districts to reevaluate their financial commitment . . .

instruction and the decisions made by Oregon educational policy makers, teachers and district administrators with regard to acquisition and dissemination of computer technology for secondary schools.

While many positive claims have been made and are still being made daily for computer-based learning and teaching, one would think that the majority of secondary school teachers today would be clamoring to teach and have students learn with computers. But visits to secondary schools have shown that this is not the case. While it is true there is a subtle shift away from the emphasis on programming and basic computer literacy towards tool application, it is also true that there is a kind of stagnation or "deflation" in the enthusiasm toward computers by teachers who could use computer technology in their classrooms. The successful computer using educators who espouse the benefits and the merits of microcomputers in secondary schools concur that the clear implications found in findings provided by this 1989 Oregon survey and many previous surveys and research studies conducted during the decade of the 80s (The State of Oregon, Lamon et. al., 1983, 1885, 1988; Becker, 1985; UNISYS/UNC-CH, 1987, State of North Carolina, 1987, etc.) are that,

. . . teachers do not know a conceptual framework for the use of the microcomputer as a tool for individual or systematic instruction,

1) secondary teachers do not know a conceptual framework for the use of the microcomputer as a tool for individual or systematic instruction,

. . . teachers do not integrate microcomputers into the actual process of their instruction . . .

2) secondary teachers do not integrate microcomputers into the actual process of their instruction, whether this integration is viewed at the teacher or student level. Therefore, anticipated or predicted changes in style and organization of instruction in secondary schools have not materialized.

3) because of lack of use, or no use, secondary teachers do not understand the relationship between the microcomputer's capabilities, strengths and weaknesses and the school curriculum.

While it is true that in Oregon, computer usage and the number of computers has grown significantly during the last five years, it is also true that in light of the findings of this survey and the state of budgetary constraints, Oregon will continue to face a serious technological issue; that of what hardware and software to acquire for instructional consumption. There is no doubt that as time progresses toward the end of this century, this issue will be aggravated by the fact that the main issues related to computer usage will shift from those related to how students acquire knowledge to those related to how students access knowledge.

It was the quest for answers to some of the questions raised by these issues, which formed the "moving force" for the undertaking of this latest survey. As any survey requires appropriate funding, the collecting of the data was made possible through funds provided by the Oregon Department of Education, the University of Oregon and the Oregon Educational Computer Consortium (OECC). The dissemination, the collecting and the entry of the data was done by graduate students enrolled in the Division of Teacher Education of the University of Oregon, while the design of the questionnaire and the analysis of the data was completed by the authors.

METHOD

The Sample

The 1989 Oregon Microcomputer Survey was conducted during the month of May. As of December 31, 1988, Oregon's 21 union high school districts and 156 unified school districts operated 62 junior high schools, 34 junior/senior high schools and 185 high schools. In these schools, located in 36 counties, a total of 200,301 students were enrolled and taught by approximately 16,000 teachers. Of these students, approximately 131,328 were enrolled in grades 9-12 and approximately 68,973 in grades 7-8. Because the least enrollment in a high school was 19 students (87 for a middle school) and a maximum of 1,924 students (925 for a middle school), a stratified sample of 94 randomly selected schools (i.e., one-third of the school population) was identified for the survey based upon school population. In other words, the sample for the survey was selected from a school population of which all schools were ranked according to the size of their student enrollment: if a school population was symbolized by "x", then:

Sample Characteristics

a) a small school was one where $0 < x < 250$
b) a medium school was one where $251 < x < 900$
c) a large school was one where $x < 900$

In this ranking, the average school population was approximately 603 students. In the 94 selected schools, the stratification revealed the following distribution: If "x" was the school population, then "x" was such that for:

a) the small school, $0 < x < 350$
b) the medium school, $351 < x < 525$
c) the large school, $x > 525$

Here, the average school population was 461 students.

As there were 62 junior high schools and 219 junior/senior high schools and high schools in the state of Oregon, representing 22% and 78% of the schools, respectively, the sample for the survey contained 21 junior high schools (i.e., 22%) and 73 junior/senior high schools and high schools (i.e., 78%). Among each of this group of schools an equal number of small, medium and large schools were represented (i.e., 7 schools of each type). Although all of these schools were selected at random, the size of their district, whether they were urban or rural and whether they had computers or not was also considered in the stratification process.

. . . teachers do not understand the relationship between the microcomputer's capabilities, strengths and weaknesses and their school curriculum.

SOURCE OF SURVEY INFORMATION

During the month of February, 1989, the principal of each targeted school received a package which contained 12 questionnaires: one for the principal, one for the computer coordinator of the building and one for each of the academic departments (i.e., English/Language Arts, Math, etc.). The booklet for the principal, when compared to either the one for the computer coordinator or the department heads was different and contained 36 questions providing detailed information about the use of computers in the school. Four main topics of questions were displayed on the questionnaire. They revolved around:

a) questions of a general nature,
b) questions about computer hardware and software,
c) questions about computer use,
d) questions about teacher training.

Because of the length and sometimes required detail of the 36 item questionnaire, as well as the desire to insure a reasonable and reliable return of each booklet, a variety of incentives for completing the questionnaire were provided.

RESPONSE RATE

As this document provides information and data only about the RETURNS and FINDINGS submitted by the PRINCIPAL of each of the targeted schools, the response rate reported here will only reflect that which relates to the questionnaires completed by the principals of the participating secondary schools. Therefore, as of May 15, 1989, the deadline by which all questionnaires had to be returned, the response rate by the PRINCIPALS was 64% (i.e., 60 returns out of 94 mailings). Although more booklets were received after the deadline, and telephone follow-ups, the results presented and discussed here are only based on the data collected up to May 15, 1989.

. . . 56% of the students were children from factory or "other service" workers, with the remaining balance of the sample evenly divided between children from professional or office workers (22%) and farming families (22%).

RESULTS

Introduction

This survey was funded as a cooperative project of the Oregon Educational Computer Consortium, the University of Oregon and the Oregon Department of Education. Therefore, it was designed to gather information on a variety of issues of concern to these organizations and related to the status and use of microcomputers in Oregon secondary schools. In order for the reader to get a better perspective of the findings revealed by this survey, the following general statistics are provided.

The total student population enrolled in the participating schools was 34,464 secondary and middle school students. The average full-time student enrollment

was 618 students, with a minimum enrollment of 69 students and a maximum enrollment of 1,403 students. In these schools, 56% of the students were children from factory or "other service" workers, with the remaining balance of the sample evenly divided between children from professional or office workers (22%) and farming families (22%). Furthermore, the percentage of students enrolled in a college preparatory, a general or a vocational curricula was as follows :

STUDENT ENROLLMENT CATEGORIES

Range	<10%	10-19%	20-29%	30-39%	>40%
COLLEGE PREPARATORY	6%	15%	34%	21%	25%
GENERAL	0%	0%	11%	40%	49%
VOCATIONAL	6%	25%	31%	27%	12%

PERCENTAGE OF SCHOOLS

*25% of the schools have more than 40% of their students in college prep courses

TABLE I

Hence, of the 59 schools responding to the question of what percent of their school population was enrolled in what curricula, almost half of the schools stated that more than 40% of their student body was enrolled in a general curriculum.

. . . 1968 was the first year in which one school acquired a computer for instruction . . .

The following now is the summary of those questions deemed to be the most informative to both teachers and administrators of secondary schools in Oregon. Because of the sampling procedures and the number of responses yielding the findings reported here, the results may be interpreted as coming from a representative sample of all secondary and middle schools in Oregon.

. . . 1986 the last year in which some schools purchased their first computers . . .

SOME HISTORICAL PERSPECTIVES

Where are we, where have we been and what is happening now in Oregon secondary schools?

While the majority of the secondary schools acquired their first computers during the 1980 school year, 1968 was the first year in which one school acquired a computer for instruction and 1986 was the last year in which some schools purchased their first computers for student and teacher use. Because budgetary constraints seem to be among the more significant variables affecting the acquisi-

tion of computer technology, principals were asked how much of their 1987-88 school year budget had been targeted for instructional equipment and materials, including books. Their responses to this request can be summarized as follows :

INSTRUCTIONAL MATERIALS EXPENDITURES

a) Money Spent On All Instructional Equipment and Materials, Including Books

Total	$6,404,610
Min.	$2,000
Max.	$613,000
Average	**$128,092**

b) Total School Budget

Total	$126,182,815
Min.	$15,000
Max.	$25,000,000
Average	**$2,380,808**

TABLE II

. . . more than half of the participating schools spent more than $4,000 on hardware.

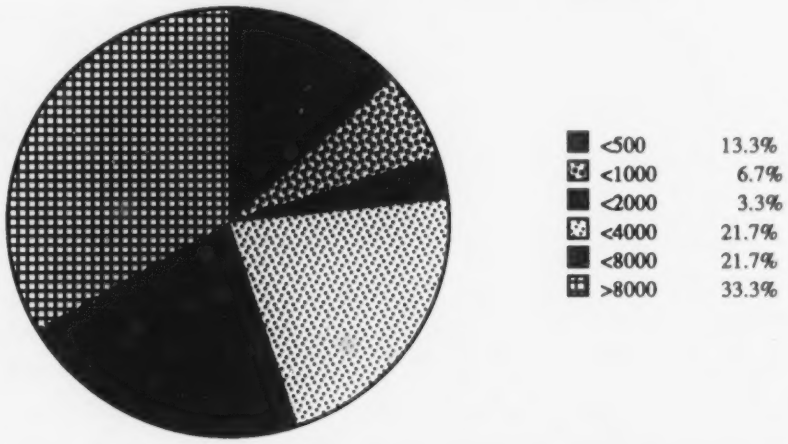
While the principals did not indicate specifically who contributed what when it came to school budget allocations, they did state that operational "dollar" funds as reported above did include funds contributed by the district, the principal's personal and departmental budgets and the PTA. Hence, in light of the above revealed data it can be stated that approximately 5% of the total 1987-88 school budget was allocated to instructional materials and equipment, including books. When asked how much money of that budget was spent on computer hardware, Graph I displays this information. Hence, more than half of the participating schools spent more than $4,000 on hardware.

. . . a 15% rate of growth over 1988-89 school year could be noted . . .

Hardware expenditures usually came from either the regular school or department funds (72%) or from the special allocation of funds from the school district (20%), and they provided an inventory of hardware which is summarized in Table III.

When asked how many additional computers for instruction might be acquired during the 89-90 school year or during the next 12 months, 10% of the respondents reported no planned increases. On the other hand, summarizing the responses of the remaining participants, a 15% rate of growth over 1988-89 school year could be noted (387 units for 59 schools, with the planned purchase of a maximum of 40 computers) with the purchase of IBM machines leading over the Macintosh computer. To complete the questions related to the acquisition of computers, principals were asked if their school did obtain several planned or not

HARDWARE EXPENDITURES



GRAPH I

COMPUTER EXPANSION

AS OF ...	Growth	Minimim Growth*	Maximum Growth*
a) Jan. 90 (projected)	14.7%	0	40
b) Jan. 89	19.9%	6	146
c) Jan. 88	23.0%	4	140

*Number of computers per school

TABLE III

planned additional computers and what would the main use be. Fifty percent of the respondents stated students would use the computers for word processing or computer literacy. Table IV illustrates these and other responses.

Fifty percent of the respondents stated students would use computers for word processing or computer literacy.

PLANNED USE FOR ADDITIONAL COMPUTERS

Students doing writing with a word processing program	31%
Computer literacy for most students	19%
Remedial work for students performing below grade level	17%
Practice in math or language skills for most students	13%
Teacher using it for classroom preparation	11%
Other	6%
Instruction in computer programming for the more advanced students	3%

TABLE IV

HOW MANY OF THESE COMPUTERS ARE LOCATED WHERE ?

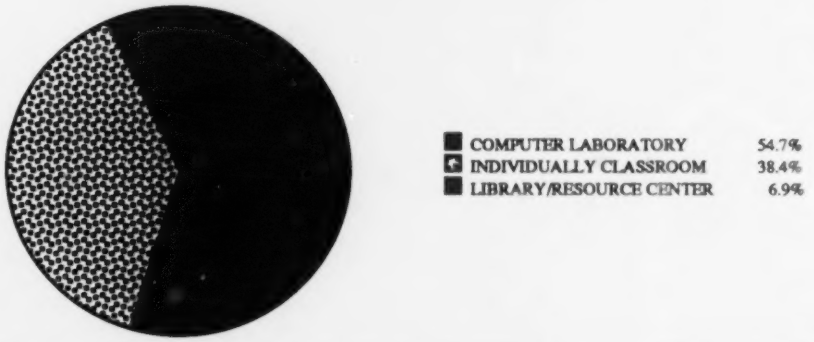
. . . the computer laboratory is the predominant place for the computers to be located . . . supervision is the responsibility of the library/media specialist.

Schools locate computers in computer laboratories, library/resource centers or in classrooms. Graph II illustrates the percentage of computers per location.

As can be seen the computer laboratory is the predominant place for the computers to be located. Interestingly, another revealing aspect in this report shows that although only 6.9% of the computers are in the library (the information center of the school), 18% of the supervision is the responsibility of the library/media specialist.

Table V provides some"insight" as to the number of computers these percentages represent.

COMPUTER LOCATION



GRAPH II

HOW MANY COMPUTERS?

Location	Aver.*	Min.	Max.
a) Computer Laboratories	25	3	93
c) Individual Classrooms	18	1	115
b) Library/Resource Centers	3	0	12

*Numbers have been rounded per school

TABLE V

All schools had at least one computer in a classroom and at least three in laboratories. Nearly all schools put their very first computer in a classroom. Laboratories were established later to give more students access.

To complete the questions regarding hardware, *principals* were asked, if their school had twice as many microcomputers today, where would these machines be located. Table VI summarizes their responses.

. . . principals were asked, if their school had twice as many microcomputers as they have today, where would these machines be located.

WHERE WOULD NEW COMPUTERS GO?

Augment the number of computers in the existing lab and spread the remaining balance among several classrooms	47%
Augment the number of computers put into classrooms	28%
Establish another computer lab	22%
No lab and all computers in classroom	2%
Some other arrangement (describe):	2%

TABLE VI

When *teachers* were asked to respond to this question on the survey, the majority of teachers tended to recommend an increase of the number of computers to be placed in classrooms, whereas 70% of the principals would either augment the number of computers in existing laboratory or establish another computer laboratory.

. . . teachers tended to recommend an increase of the number of computers in the classrooms, whereas 70% of the principals would either augment the number of computers in the existing laboratory or establish another computer laboratory.

. . . while 55% of the participating schools spent more than $4,000 on hardware, budget provisions for software averaged less than $1,000 . . .

What is the status of the acquired software in the schools?

While schools do not hesitate to spend a certain amount of their instructional budget on hardware and its peripherals, sometimes the allocation of funds for software is overlooked. This survey revealed that while 55% of the participating schools spent more than $4,000 on hardware, budget provisions for software averaged less than $1,000 during the 1987-88 school year. Table VII below gives a better insight as to how much money was spent by the schools in this survey.

SOFTWARE SPENDING PER SCHOOL 1987-88

Dollars Spent	Percent
less than $50	0%
50-100	3%
100-150	5%
150-200	2%
200-300	7%
300-500	7%
500-750	10%
750-1000	17%
more than $1000	50%

TABLE VII

It is probably true that the degree of commitment to computer technology in a school is determined by the degree of personal commitment and influence of its teachers, students, school principal and parents. Principals were asked to state whose efforts or influence in their school had been the most important in their most recent computer acquisition. Table VIII below summarizes their responses.

MOST RESPONSIBLE FOR LATEST ACQUISITION

A single teacher, dept. chair, or computer coordinator	36%
The school principal	33%
A group of teachers and other staff members	13%
District level staff	11%
Other (describe)	5%
Administrators other than the principal at the school	3%
ESD/County Unit	0%

*Four districts provided more than one response to this question

TABLE VIII

As can be seen by the table, in the majority of cases, principals state the impetus for purchasing computers has been the work of a single individual. In fact, the principal is often that person. Care should be taken in interpreting this information. If schools have a linear staffing arrangement, a department head would be the only known spokesperson when in reality several people could be involved.

. . . in the majority of cases, principals state the impetus for purchasing computers has been the work of a single individual.

Because computers are used by both students and staff members in a school, principals were asked who of their school staff was directly responsible for coordinating or supervising the use of their computers. A list of designated staff members directing the use of computers and ranked according to the most prevailing practice follows in Table IX.

COORDINATING USE OF COMPUTERS

A full-time regular teacher, who also serves as a computer coordinator	36%
The school librarian or media specialist coordinates computer use	18%
The school principal or another administrator coordinates use	18%
Full-time comp. coordinator whose only teaching relates to computers	10%
No one directly responsible	8%
Computers are used by a few teachers who work out their own arrangements	7%
A district-level computer specialist or shared computer	2%
Another person (describe)	2%

TABLE IX

Of interest here is the fact that most secondary schools tend to have a designated person responsible for coordinating the use of the computers in their building. If a full-time regular teacher can serve as the school's computer coordinator, then principals perceive this to be the most desirable option. Most educators will concur with the fact that the location of computers in a school is critical to their usage. In this survey, 95% of the participating schools had a computer laboratory, in which 71% of the time the classroom teachers or department chairpersons supervise the attending students and only 12% of the time full-time computer coordinators. Furthermore, students attending laboratory sessions come from all levels of academic performance.

. . . most secondary schools tend to have a designated person, responsible for coordinating the use of the computers in their building.

Where, how and by whom are microcomputers primarily used?

Seldom do people think of the effect of the attitude of the principal toward computer use and its impact . . .

When people discuss the educational or cost effectiveness of computers, thoughts on the subject are related in terms of their effects on the performance of students or their impact on the instructional process generated by teachers. Seldom do people think of the effect of the attitude of the principal toward computer use and its impact on these issues and many other issues related to the acquisition and dissemination of computer technology in the school. Therefore, in order to get some insight into the attitude of the principals toward computer technology, this survey provides a few questions, the first two of which are related to ownership of a home computer and to the hours per week of use for any purpose. The other questions attempted to shed some light on the type of use and the intensity of use.

Responses to the first two questions revealed that 73% of the principals owned no computer and that 75% of those who did own a computer had the same brand of computer used in their school. Furthermore, the average number of hours per week administrators used home computers was approximately 9 hours, with a minimum of 1 hour and a maximum of 20 hours reported usage. Table X identifies the type of uses and the degree of involvement by the responding principals.

TYPE OF USE BY PRINCIPALS

	Never	Monthly	Weekly	Daily
Use a word-processing or other program for preparing student tests or assignments	72%	13%	6%	9%
Use a word-processing program for other professional needs (describe)	46%	7%	20%	27%
Use a program for entering or calculating grades	87%	2%	8%	4%
Try out a program in preparation for students using it	79%	15%	6%	0%
Use other programs (describe)	52%	20%	11%	17%

TABLE X

Those who did interact with a utility program of some sort used the school computer an average of approximately 4 hours a week.

Most of the above results should not be a surprise to anyone, as most secondary school principals do not get directly involved with tasks of an instructional or teaching related nature. It is interesting to note that approximately 50% of the principals do not get involved with using any software program which could be of

benefit to them in carrying out their responsibilities as the chief school administrator.

Those who did interact with a utility program of some sort used the school computer an average of approximately 4 hours a week. Some principals worked up to a maximum of 20 hours per week. The interaction that principals had with the computer is now summarized in Table XI.

HOW PRINCIPALS USED MICROCOMPUTERS

	Yes	No
Retrieved administrative information directly from a computer.	78%	22%
Wrote a memo, letter, or report using a word-processing program.	64%	36%
Tried out an instructional program that might be used by students.	66%	34%
Wrote a computer program in Basic or another computer language.	31%	69%

TABLE XI

Hence, the most common task performed by principals on the computer is one of an administrative nature, although 66% of them stated that they did interact with an instructional program of some kind. This helps confirm that principals are also instructional leaders. Not only are they instructional leaders but nearly one-third of them have written programs.

This helps confirm that principals are also instructional leaders . . . nearly one-third of them have written programs.

On the other hand, when principals were asked to estimate how many teachers and others of the professional staff regularly used a program of an instructional or administrative type, Table XII could be constructed. The table reflects both the type of program and the number of teachers using them.

As can be noted, between 5 and 10 teachers of an average staff of 39, regularly use programs of an instructional or administrative nature.

Copyright is an interesting topic of research. The Oregon Department of Education recommends that all school districts should have a copyright policy to protect the district from liability and to clarify for the teachers what is appropriate. However, almost 50% of the schools have no copyright policy. The majority of those who do have copyright policies subscribe to the guidelines offered by the International Society of Technology in Education.

. . . all school districts should have a copyright policy to protect the district from liability and to clarify for the teachers what is appropriate.

. . . almost 50% of the schools have no copyright policy.

NUMBER OF TEACHERS USING COMPUTERS

# of teachers	None	<5	6-10	11-16	17-27	28-38	38-49
Instructional programs (DP, tutorial, etc.)	0%	49%	31%	4%	11%	2%	0%
Utility progs. (WP, DB, SS, except grading)	4%	39%	31%	11%	11%	0%	4%
Programs for recording student grades (including data management programs)	6%	22%	31%	19%	9%	9%	4%
Programs for instructional management (for example IEP reports)	12%	67%	20%	2%	0%	0%	0%
Programs for storing and retrieving test questions	12%	44%	27%	15%	2%	0%	0%
Information retrieval programs for career guidance	13%	63%	15%	8%	0%	0%	0%
Other administrative and management programs.	4%	66%	11%	11%	8%	0%	0%

*The average school had 39 teachers

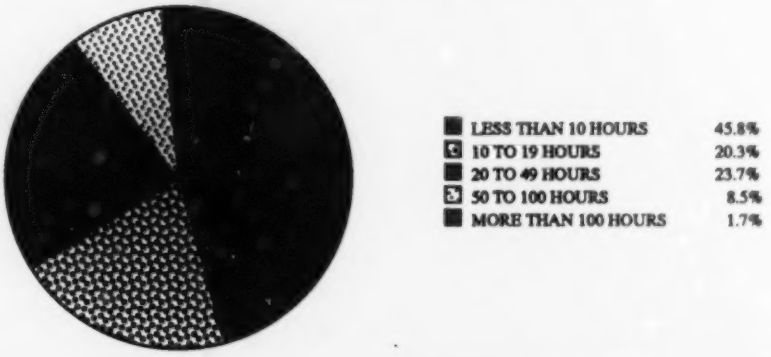
TABLE XII

In order to get some idea as to the computer-related knowledge administrators possessed, principals were asked how many hours in the past three years were spent in formal classes, training or workshops on computer-related topics. Their responses are summarized and displayed in Graph III.

Principals were asked to respond to a list of possible complaints . . .

While the responsibilities of a secondary school chief administrator go beyond those related to the proper operations of the school, the administrator must also listen to concerns expressed by students, teachers and/or parents. Some of these concerns today relate to computer use. Principals were asked to respond to a list of possible complaints they might have heard in the school building. Supplying these participants with a set of possible complaints, Table XIII illustrates their responses to such a list.

FORMAL COMPUTER TRAINING



GRAPH III

CONCERNS SOMETIMES HEARD BY PRINCIPALS

Frequency of Concerns	None	1-2	3-5	6-10	11+
From a parent: "My child isn't getting an opportunity to use a computer."	69%	17%	8%	2%	3%
From a teacher: "My students can't get enough computer time."	39%	24%	17%	14%	7%
From a teacher: "I can't get enough computer time for my own use."	42%	29%	32%	5%	3%
Other major concerns about access to computers	56%	16%	19%	5%	5%

TABLE XIII

Looking at these findings as displayed in Table XIII, it is rather obvious that the most common complaints expressed by teachers (i.e., 61% & 58%) relate to the fact that neither the students or the teachers get enough access to a computer.

. . . most common complaints expressed . . . that neither the students nor the teachers get enough access to a computer.

To get some feeling as to what these principals perceived to be the most useful application of the computer when they first acquired one, five choices were displayed in one of the questions presented to them. Table XIV displays the summary of these responses.

EXPECTED USEFULNESS OF SCHOOL'S VERY FIRST MICROCOMPUTER	
As a resource for students to learn more about computers	52.36%
"I don't know—I was not present."	26.3%
As a method of improving student's basic skills in mathematics or language	10.5%
As a tool for students to use whenever and wherever appropriate (no expectation)	8.8%
As a tool for students to accomplish an academic task—such as in writing, analyzing data, or problem solving	1.8%

TABLE XIV

Most educators would agree that the most useful application of the computer today is as a tool and most of them would concur with the principal's perception that when computers first appeared in the schools, they were viewed as a resource for students to learn more about computers. Times have changed indicated by a 26.3% staff turnover of principals.

What are the issues of teacher training?

The average number of faculty or teaching staff at the participating schools was 39 teachers, with a maximum of 89 and a minimum of 8. Of these teachers, 59% reported that they had no computer training whatsoever while the remaining balance had ten or more hours in either a district inservice program or in a college credit class. However, most of these same individuals do recognize the importance of being well informed about the capabilities and limitations of the computers in secondary education and the critical issue of teacher education.

The request was made for a self-rating by the principal and staff . . .

Because many issues related to the education of teachers, this survey attempted to assess the degree of competence held by secondary teachers in the use of computer programs today. The request was made for a self-rating by the principal and staff from competent to expert in the use of a variety of suggested types of programs. Table XV summarizes their responses.

Table XV clearly shows that the greatest strength among teachers resides in the use of some instructional program and a professional tool such as a word processor. However, teacher training still continues to be a major issue in the use of computers.

STAFF COMPETENCY WITH COMPUTERS AS PERCEIVED BY PRINCIPALS

	Competent	Range*	Expert	Range**
Using some instructional computer programs with at least one type of computer	38%	2 to 65	13%	1 to 20
Knowing about a wide variety of instructional computer programs useful in teaching	23%	2 to 50	10%	1 to 10
Using word-processing, record-keeping, or similar professional tools	33%	1 to 60	13%	1 to 16
Writing useful programs in a computer programming language	8%	1 to 20	5%	1 to 10

* Minimum and maximum number of teachers identified as competent
** Minimum and maximum number of teachers identified as expert

TABLE XV

. . . if they had a choice between giving as many teachers as possible some training in computer usage versus a few teachers extensive training . . .

To conclude the questions on this issue, principals were asked if they had a choice between giving as many teachers as possible some training in computer usage versus a few teachers extensive training, which one of these choices would they make. Their response is summarized and displayed in Graph V.

COMPUTER TRAINING OF TEACHERS

GRAPH V

Of the principals, 80% concurred with the requirement that colleges and universities should require prospective teachers to have computer skills for education.

While the majority of principals felt that as many teachers as possible should be trained in the effective use of computers, strong support could be heard when asked whether or not preservice teachers should be required to take computer related teaching skills courses before graduation. Of the principals, 80% concurred with the requirement that colleges and universities should require prospective teachers to have computer skills for education. On the other hand, when asked whether or not computer related competencies should be required for recertification of present teachers and themselves, 68% gave a negative response.

. . . should computer-related competencies be required for recertification . . .

CONCLUSION

This report summarizes the perceptions and opinions of secondary school principals, on the status of microcomputers in the schools. Though the sample of schools represents approximately 20% of all the junior and senior high schools in the state of Oregon, it can be viewed as a reliable representation of these schools. While the reader should review these results with prudence, especially when tempted to generalize some of these findings, he/she might consider these results as an accurate reflection of how secondary schools in Oregon acquire and use their computer hardware and software.

The principal's booklet contained 35 questions, all geared at shedding some light on the variety of issues surrounding computer use in education. The highlights of the findings to these questions, can be summarized as follows:

a) The average school budget contains 5.3% for all instructional equipment and materials. Of that amount, expenditures on computer hardware falls on the average between 3.1% and 6.2% per year, which represents an allocation ranging between approximately $4,000 and $8,000 of the total instructional materials budget. Funds for software are about .8% of the instructional materials budget, in the $1,000 range. They are obtained from regular or department funds 72% of the time.

b) Principals feel schools have too few computers to be educationally effective and software is too expensive when the needed quantity of programs is considered. Anticipated computer purchases indicate a projected 15% rate of growth in 1990 over 1989, most of these computers are planned to augment the number of computers in the existing laboratories, with the remaining balance spread among several classrooms.

c) While the majority of principals are competent computer users, they see a need for more formal training for themselves and their collegues. Most of the principals do not own a home computer and those that do, spent an average of 8 hours per week on administrative tasks. Seldom do they interact with instructional or instructional management programs, but most of them have tried them out.

d) Principals do concur that teacher training continues to be a major issue. They recommend that most teachers be given computer training, not just a selected few, and that teacher training institutions in the state of Oregon make computer literacy mandatory before teaching certification is granted. The majority of them do believe however that computer related competencies not be required for recertification.

e) If school administrators are serious about using computers as an effective aid and tool in instruction, then they must be prepared or plan to give their teachers incentives such as a reduced teaching load or a summer salary to develop curriculum or course materials related to using computers.

While research of an empirical or quasi-empirical nature might provide more detail as to the current status and future of these electronic machines, a survey such as the one conducted here sheds some light on what goes on in the secondary schools today. It provides factual and pragmatic information of value to the decision makers based in schools and school districts at large. If one is looking for information based upon the observations, feelings, attitudes and perceptions of those who use computers daily, then a survey of this nature is worthwhile. The answers provided by these human attributes describe what is really going on in the typical secondary school, and defines issues which have been left unexplored by the typical research studies found in the traditional state, national and international journals on computers in education .

It is hoped, therefore, that the findings provided here will not only be helpful and informative, but when viewed collectively with the already existing findings provided by research on the issues discussed in this document, will yield a better profile of what has happened and what is to come.

REFERENCES

Becker, H. J. (1983/1984). **SCHOOL USES OF MICROCOMPUTERS : Reports From a National Survey** (Issues 1-6). Baltimore, MD: Center for Social Organizations of Schools, The John Hopkins University.

Becker, H. J. (1988). **INSTRUCTIONAL USES OF SCHOOL COMPUTERS: Reports From the 1985 National Survey** (Issues 1-4) Baltimore, MD: Center for Social Organizations of Schools, The John Hopkins University.

Betty A. Collis, et. al. (1989). **NATIONAL TRENDS IN COMPUTER USE AMONG CANADIAN SECONDARY SCHOOL STUDENTS: IMPLICATIONS FOR CROSS-CULTURAL ANALYSIS**. Eugene, Oregon: Journal of Research on Computing in Education, International Society for Technology in Education.

David E. Hawley, et. al. (1986). **COST, EFFECTS AND UTILITY OF MICROCOMPUTER-ASSISTED INSTRUCTION**. Eugene, Oregon: Center for Advanced Technolgy in Education, University of Oregon.

Lamon, W. E. (1986). **INTEGRATING MICROCOMPUTERS IN ELEMENTARY AND SECONDARY EDUCATION: An Oregon Perspective.** COM 3 12(2), 11-13, Australia.

Lamon, W. E. and Sanner, J. W. (1986). **THE STATUS OF MICROCOMPUTERS IN OREGON PUBLIC SCHOOLS**. Salem, Oregon: Oregon Department of Education.

Lamon, W. E. (1988). **THE STATUS OF MICROCOMPUTERS IN OREGON ELEMENTARY SCHOOLS**. Salem, Oregon: Oregon Department of Education.

Lockheed, M. E., and Mandinach, E. B. (1986). **TRENDS IN EDUCATIONAL COMPUTING: Decreasing Interest and the Changing Focus of Instruction.** Educational Researcher.

Office of Instructional Technology, South Carolina Department of Education (1987). **REPORT ON 1986-87 STATEWIDE COMPUTER SURVEY,** South Carolina: S.C. ETV Network.